

**EXPLOSIVES SAFETY SUBMISSION (ESS)  
ORDNANCE AND EXPLOSIVES (OE) REMOVAL ACTION  
CASTNER RANGE  
FORT BLISS, TEXAS**

**Prepared for**

**U. S. Army Corps of Engineers  
Huntsville Center**

**Contract No: DACA87-87-00-D-0036  
Task Order: 0014  
Project No: K06TXCAST06SWF**

**Prepared By**

**USA Environmental, Inc.,  
5802 Benjamin Center Drive, Suite 101  
Tampa, Florida**

**November 2002**

TABLE OF CONTENTS

<u>PARAGRAPH</u>	<u>PAGE</u>
1.0 INTRODUCTION .....	1-1
1.1 REASON FOR OE .....	1-1
1.2 AMOUNT AND TYPE OF OE .....	1-1
1.2.1 MOST PROBABLE MUNITION .....	1-2
1.3 START DATE .....	1-2
1.4 FROST LINE .....	1-2
1.5 CLEARANCE TECHNIQUES .....	1-2
1.5.1 CAPABILITIES AND LIMITATIONS .....	1-3
1.5.2 SEARCH LANES .....	1-3
1.5.3 MAGNETOMETER SEARCH .....	1-3
1.5.4 SUBSURFACE REMOVAL PROCEDURES .....	1-3
1.5.4.1 Equipment .....	1-4
1.5.5 ENGINEERING CONTROLS .....	1-4
1.5.5.1 Use of Barricades .....	1-4
1.5.5.1.1 Personnel Protective Equipment (PPE) .....	1-4
1.5.5.1.2 Inspection .....	1-4
1.5.6 ANOMALY INVESTIGATIONS .....	1-5
1.5.7 OE/UXO DISPOSAL .....	1-5
1.5.7.1 Disposal Procedures .....	1-5
1.5.7.2 Control and Accountability .....	1-5
1.5.7.3 Demolition Operations .....	1-5
1.6 QUALITY ASSURANCE/QUALITY CONTROL .....	1-5
1.6.1.1 Failure Criteria .....	1-6
1.7 REMOVAL AND DISPOSAL OF SCRAP METAL .....	1-6
1.8 ALTERNATE TECHNIQUES .....	1-6
1.9 OFF-SITE DESTRUCTION .....	1-6
1.10 TECHNICAL SUPPORT .....	1-6
1.11 LAND USE RESTRICTIONS .....	1-7
1.12 PUBLIC INVOLVEMENT .....	1-7
1.13 MAPS .....	1-7
1.13.1 REGIONAL MAP .....	1-7
1.13.2 SITE MAP/QD MAPS .....	1-7
1.14 PLANNED OR ESTABLISHED DEMOLITION AREAS .....	1-8
1.15 FOOTPRINT AREAS .....	1-8
1.15.1 BLOW-IN PLACE .....	1-8
1.15.2 COLLECTION POINTS .....	1-8
1.15.3 IN GRID CONSOLIDATED SHOTS .....	1-8

Attachment 1: Regional Maps

Attachment 2: Quantity Distance (QD) Maps

## EXPLOSIVES SAFETY SUBMISSION

### 1.0 INTRODUCTION

This Explosive Safety Submission (ESS) has been prepared for a Removal Action (RA) within selected areas of Castner Range, Fort Bliss Texas. The purpose of this Removal Action is to detect, identify, and remove ordnance and explosives (OE) in approximately 1,291 acres in five initial separate locations (see Table 1-1) within the Castner Range to the depth detected. Depending on the items located during the surface search the subsurface acreage will vary within the areas. The RA is being conducted under Scope of Work (SOW), Ordnance and Explosives (OE) Removal Action, Castner Range, Fort Bliss Texas, Revised 28 August 2002, Contract DACA87-00-D-0036, Delivery Order 0014. USA Environmental, Inc. (USA), under the delivery order, submitted a draft work plan for review and approval.

*TABLE 1-1: INITIAL REMOVAL AREAS*

AREA	ACRES
1. North Hills	253
2. Hondo Pass	337
3. Museum & Poppy Area	327
4. City Of El Paso Access	148
5. Fusselman Canyon	226
6. *TBD	481
Totals	1772

\* An amendment to the ESS will be submitted for approval upon selection of the Area 6 RA location and prior to starting operations. The amendment will include the applicable most probable munition, minimum separation distance, associated maps, and Quantity Distance drawings.

The work required under this Scope of Work (SOW) falls under the Defense Environmental Restoration Program (DERP) - Installation Restoration Program (IRP). Ordnance and Explosives (OE) contamination may exist on property presently owned by the Department of the Army. OE is a safety hazard and may constitute an imminent and substantial endangerment to the local populace and site personnel. During removal action, it is the Government's intent that the OE contractor shall destroy all OE encountered, on-site. This action will be performed in accordance with (IAW) the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, Section 104) and the National Contingency Plan (NCP) (Sections 300.120(d) and 300.400(e)(1)). The provisions of 29 CFR 1910.120 shall apply for this site.

### 1.1 REASON FOR OE

Castner Range was originally established in 1926 and included approximately 3,473 acres. A Deed of Cession was obtained from the State of Texas in October 1928 enlarging the Castner Range Area. Subsequently, an additional 4,800 acres were acquired by purchase in 1939. From the time Castner Range was established until its closure in 1966, the Range was used as an ordnance impact area for a number of different weapon types.

### 1.2 AMOUNT AND TYPE OF OE

Previous investigations and studies throughout Castner Range have identified numerous surface and some subsurface ordnance items ranging from hand/rifle grenades, rockets, and 37 mm to 105 mm

projectiles. Based on the previous investigations it is anticipated that OE items may be encountered in each of the five initial areas of interest (AOI).

#### **1.2.1 MOST PROBABLE MUNITION**

The most probable munition (MPM), based on items encountered during previous investigations within each of the AOIs, is shown in Table 1-2. If during the course of the investigation, OE with a greater fragment range than the MPM is encountered, the minimum separation distances (MSD) in DOD 6055.9 STD, Chapter 5, paragraph C5.5.4 will be used. The MSD for the MPM will be recalculated by USAESCH, the quantity-distance (Q-D) arc will be adjusted, and an amendment to the ESS will be submitted for approval.

**TABLE 1-2: MOST PROBABLE MUNITION**

Area	***MPM	Max. Frag. Range (ft.)	Range to No More than 1 Hazardous Fragment per 600 sq. ft. (ft.)	*Unintentional Detonation		**Intentional Detonation	
				K50 Range to 0.9 psi Overpressure (ft.)	Maximum Fragment Range (ft.)	K328 Overpressure Range (ft.)	
1	40 mm M406	345	N/A	23	345	153	
2	37mm MK II	980	200	20	980	131	
3	75 mm HE M48	1701	234	60	1701	396	
4	75 mm HE M48	1701	234	60	1701	396	
5	75 mm HE M48	1701	234	60	1701	396	
6	TBD						

Notes:

\* Team separation distance for unintentional detonations is the K50, or 200 feet minimum whichever is greater. Maximum fragmentation distance for other personnel.

\*\* MSD for intentional detonations is maximum fragment range of the MPM for the OE area.

\*\*\* MPM based on previous investigations by UXB, CMS, and EHSI.

#### **1.3 START DATE**

Phase 1 mobilization for site setup, hiring of local personnel and site training is scheduled for January 12, 2003. Surface and subsurface removal is scheduled to begin on February 3, 2003.

#### **1.4 FROST LINE**

Not applicable. The El Paso, Fort Bliss area is a semi-arid subtropical climate with light precipitation and an average depth of frost penetration of 2-inches. All identified surface and subsurface anomalies/targets will be cleared to detection depth.

#### **1.5 CLEARANCE TECHNIQUES**

USA will perform an OE Removal Action at the Castner Range sites. The removal action will include subsurface investigations to depth. Teams consisting of a UXO Technician III (Team Leader) and local hire, trained UXO Sweep personnel will perform a magnetometer search of the 60 x 60 meter grids. The sweep teams will mark surface UXO and subsurface anomalies for investigation and disposal by the Investigation Teams. Grids will be searched in approximate 1.5-meter lanes and cleared to depth. The anomalies will be excavated, identified, recorded and either destroyed by detonation in place or moved to

a consolidation point within the grid by the follow-on Investigation Teams. Scrap will be segregated and placed in temporary stockpiles and secured in a container at the work trailer site at the end of the workday. Excavations will be backfilled. In accordance with the Fort Bliss Environmental Office, demolition shot holes will be left open to weather and recover naturally to preclude additional collateral damage in attempting to backfill. The following sub-paragraphs describe the equipment and procedures the individual UXO Teams will use to search the individual grids and to mark UXO and subsurface anomalies.

#### **1.5.1 CAPABILITIES AND LIMITATIONS**

Based on the terrain and vegetation USA will use hand-held ferrous magnetometers and/or non-ferrous metal detectors for the detection of OE items. Both the Schonstedt GA-52CX and the White Eagle Spectrum have the capabilities of detecting the MPM within each of the AOIs. Some locations within the areas may contain metal ore-bearing rocks and teams will use whichever instrument provides the most accurate response. The terrain is mostly rocky with little topsoil except in arroyos where topsoil may be deeper due to erosion. Due to the limited amount of topsoil the magnetometers will be able to detect OE/UXO to its maximum penetration depths.

The SOW prohibits any vegetation clearance for the sites and some areas have arroyos and/or thick underbrush that would preclude the use of towed instruments. The OE surveys within these arroyos and underbrush will require inserting the magnetometers in, around, and under the vegetation to detect the surface and subsurface anomalies. During the OE survey USA will record these areas within grids, using Global Positioning System (GPS), where the efficiency of OE surveys were impacted by terrain and/or vegetation.

#### **1.5.2 SEARCH LANES**

Each grid will be sub-divided into individual search lanes. Individual search lanes will consist of approximately 1.5-meter wide parallel paths that run parallel to one boundary of the operating grid. Most of the vegetation consists of waist-high scrub brush that will accommodate the 1.5-meter search lanes. In heavily vegetated areas and arroyos the search lanes will be adjusted consistent with access and area coverage. Search lanes will run adjacent to each other and completely cover the entire operating grid.

#### **1.5.3 MAGNETOMETER SEARCH**

After the individual search lanes have been established personnel will begin searching each lane with a magnetometer. UXO Sweep personnel will start at one end of each lane and will move forward toward the opposing base line. During the forward movement the individual will move the magnetometer from one side of the lane to the other. Both forward movement and the swing of the magnetometer will be performed at a pace that ensures that the entire lane is searched and that the instrument is able to appropriately respond to subsurface anomalies.

Whenever a subsurface anomaly or metallic surface object is encountered the individual will halt and install the appropriately colored flag at that location. Throughout this operation, the UXO Team Leader will closely monitor individual performance to ensure that these procedures are being performed with due diligence and attention to detail. Surface UXO encountered will be marked, reported to the SUXOS, and left in place for the Investigation Team for final identification and disposal.

#### **1.5.4 SUBSURFACE REMOVAL PROCEDURES**

Teams consisting of all UXO qualified personnel will perform subsurface investigations of marked anomalies. Once sufficient grids have been completed to warrant the start of anomaly investigations and

maintain team separation distances (see Table 1-2), the UXO Technicians will begin excavating and investigating the subsurface anomalies. During this operation, the UXO Team Leader will disperse the UXO Technicians across the operating grid in a manner that maximizes the separation distance between individual technicians. Excavation of anomalies will be performed in accordance with the procedures outlined in the following subparagraphs.

#### **1.5.4.1 Equipment**

The equipment requirements for this activity include:

- Schonstedt GA-52CX magnetometer and/or White Eagle Spectrum metal detector, which will be used to detect subsurface metallic anomalies and/or UXO. If encountering ore-bearing rocks the Team will use whichever magnetometer provides the most accurate response to the target(s);
- Hand digging tools such as shovels and hand trowels.

#### **1.5.5 ENGINEERING CONTROLS**

In some areas, it may be necessary to use a Miniature Open Front Barricade (MOFB) as engineering controls depending on the MPM and required MSD to protect non-essential personnel and property. The following paragraphs outline the use, maintenance, and precautions for their use.

##### **1.5.5.1 Use of Barricades**

The use of the MOFB will be in accordance with HNC-ED-CS-S-98-8, dated November 1998. USA personnel who employ the barricades will be trained in their proper use. The barricades will be used to investigate suspected ordnance items in areas where the observation of the Established Exclusion Zone (EZ) is not possible.

- Install all plates prior to investigating and/or excavating the anomaly;
- The barricade will be placed with the anomaly located a minimum of 6 inches inside the open front;
- The rear of the barricade will face the area to be protected;
- Use of the MOFB is based on a MPM, of which the largest allowed is the 81 mm Mortar, HE, M374;
- Follow all precautions associated with ordnance and explosives;
- Observe safe work practices and procedures.

###### **1.5.5.1.1 Personnel Protective Equipment (PPE)**

Personnel while using the barricades will wear level "D" PPE. PPE will be in accordance with the Site Safety and Health Plan (SSHP). Personnel will use either steel-toe footwear or toe protectors when placing or moving barricades or involved with Material Handling Equipment (MHE).

###### **1.5.5.1.2 Inspection**

The barricades will be inspected for completeness and serviceability prior to and following each use. Missing or unserviceable components will be reported to the SUXOS or the UXOSO for repair or replacement. The barricades will be stored as a complete unit with all plates available to facilitate ease of inspection and accountability of components. Barricades will be placed on a wooden pallet or other suitable material. The barricades will be transported by the most appropriate method available.

### **1.5.6 ANOMALY INVESTIGATIONS**

The anomalies marked by the UXO Sweep Teams will be investigated using manual excavation methods. Anomalies will be pursued to depth.

### **1.5.7 OE/UXO DISPOSAL**

USA intends to utilize electrical disposal procedures for this Removal Action. However, due to the possibility of periods of high static electricity and availability of explosives in the Fort Bliss ASP it may be necessary to utilize non-electric procedures. All personnel directly or indirectly engaged in UXO operations are thoroughly trained and capable of recognizing hazardous explosive exposures.

Demolition operations will not begin in a work site until all non-essential personnel are outside of the EZ established for the ordnance being detonated. UXO that is unsafe to move (e.g. fuzed items) must be blown in place (BIP). USA will use engineering controls such as sandbags, in accordance with HNC-ED-CS-S-98-7: Use of Sandbags for Mitigation of Fragmentation and Blast Effects Due to Intentional Detonation of Munitions, whenever it is necessary to blow in place items that are close to exposed personnel, public traffic routes, and structures that could be impacted by the explosion.

#### **1.5.7.1 Disposal Procedures**

All OE will be destroyed the day it is recovered. Disposal will take place in the grid in which the OE is located. Disposal will be in accordance with USAESCH HNC-ED-CS-S-98-7 (Use of Sandbags for Mitigation of Fragments and Blast Effects Due to Intentional Detonation of Munitions) with electric or non-electric utilizing detonating cord, composition C4, jet perforators, and proper sandbag techniques. Demolition safety and operations will be conducted in accordance with the standard practices and procedures outlined in TM 60A 1-1-31 and the appropriate specific 60 Series EOD Publications. UXO will only be destroyed after positive identification

#### **1.5.7.2 Control and Accountability**

The SUXOS will record usage data of explosives and the quantities of UXO destroyed in place. The SUXOS will be responsible for the proper use, issue, and maintenance of all explosive records.

#### **1.5.7.3 Demolition Operations**

Demolition operations, if required, will take place at the end of each workday for all UXO/OE unfuzed and fuzed items. If an event, such as inclement weather, prevents the destruction of any UXO, arrangements will be made to provide security for the site (i.e., SUXOS in conjunction with local law enforcement officials or Fort Bliss Military Police will secure the area, preventing unauthorized personnel from entering). The SUXOS will be responsible for determining the minimum safe conditions to perform demolition operations. UXO personnel will provide perimeter security for all demolition operations.

## **1.6 QUALITY ASSURANCE/QUALITY CONTROL**

USA will perform a Quality Control (QC) survey using a handheld locator of the same technology used for the original survey covering a minimum of ten (10) percent of each grid after field operations have been completed in the grid. Excavations of any uninvestigated subsurface anomalies discovered during the QC survey will be thoroughly investigated and the results recorded. A QC check of selected investigated anomalies will be performed to determine that the excavation removed the anomaly and there are no remaining items of concern. The USACE OE Safety Specialist will perform a Quality Assurance Inspection of approximately 10% of grids upon completion of the RA and USA QC.

#### **1.6.1.1 Failure Criteria**

A failure will occur if, during the QC or the Government Quality Assurance (QA) of any grid, a piece of ferrous metal equivalent in size to a MK II hand grenade or larger is found. A failure will occur if any UXO/OE item is found. Failures will be documented, reported, and corrective actions taken, to include a re-sweep of the grid.

### **1.7 REMOVAL AND DISPOSAL OF SCRAP METAL**

Within or adjacent to each operating grid, the UXO Team will establish temporary non-hazardous OE scrap collection points. During operations, OE items that are free of explosive contamination will be placed into these collection points. OE items that require venting to determine if they are explosives free will be included in demolition operations and vented using a Jet Perforator (shape charge) to explosively open the item. Upon completion of operations in that grid, the material in these temporary collection points will be collected by the team and transported to locked containers located at the field office site at the U.S. Border Patrol Museum. The Border Patrol Museum site is secured during non-work days and evenings with a locked gate and the site is normally included during local law enforcement, and Military Police patrols.

As the material is being placed into the locked containers, the SUXOS and UXO Quality Control Specialist (UXOQCS) will perform a second inspection of the material to ensure it is free of explosives and other hazardous materials. The SUXOS will prepare and sign as certifier a DD Form 1348-1A and the USACE OE Safety Specialist will sign as verifier with the following statement:

"This certifies that the AEDA residue, Range Residue, and/or Explosive Contaminated Property listed has been 100 percent properly inspected and to the best of our knowledge and belief are inert and/or free of explosives or related material."

At project completion, or when on-site scrap containers are full, USA will turn-in the scrap to a local scrap dealer for disposal. USA has coordinated with M&M Metals, El Paso, TX for demilitarization and disposal of OE and non-OE related scrap metal. M&M will provide USA with certification that the material will be smelted or crushed prior to release for sale. USA will track the material from the time of recovery through the disposal process and will include this documentation in its Final Report.

### **1.8 ALTERNATE TECHNIQUES**

There are no alternate techniques planned for destruction of OE onsite. The onsite method selected to destroy OE is detonation.

### **1.9 OFF-SITE DESTRUCTION**

Off-site destruction will not be used to destroy of OE recovered at Castner Range.

### **1.10 TECHNICAL SUPPORT**

USA Environmental, Inc. will provide on-site contractor support for location, identification, and disposal of OE. USA will subcontract to a local professional surveyor to establish area boundaries. In the advent that OE is encountered that cannot be detonated on site, USA will coordinate with the USAESCH for EOD support.

There has been no evidence of chemical warfare materiel (CWM) being stored, tested, or exists within the area comprising this project. If onsite UXO personnel suspect that an excavated anomaly is a potential CWM item, the following procedure will be implemented:

- Work will immediately stop and all workers will leave the area to an upwind location.
- The onsite UXO personnel will contact the SUXOS for confirmation.
- The Senior UXO supervisor will notify the USACE onsite OE Safety Specialist, and the USA home office. The USACE OE Safety Specialist will notify Fort Bliss and Explosive Ordnance Disposal (EOD).
- The USA Project Manager will call the USAESCH Project Manager to inform him that a potential CWM item has been discovered.
- Onsite UXO personnel will secure the site and will post two UXO technicians to guard the site until direction is received from USAESCH or until military EOD or a Technical Escort Unit (TEU) arrives to take control of the site. USA and its subcontractors will stand ready to support the military or USAESCH as required.

#### **1.11 LAND USE RESTRICTIONS**

There are no current plans to release the property from DOD control and as such no restrictions. Castner Range is currently posted as no trespassing, Government property. If at a future point the property is disposed of, land restrictions will be addressed based on clearance efforts and items encountered during the Removal Action.

#### **1.12 PUBLIC INVOLVEMENT**

Public involvement is through a periodic Restoration Advisory Board (RAB) held to discuss Fort Bliss environmental clean up actions and initiatives. Castner Range has been the focus of many of these meetings.

#### **1.13 MAPS**

Maps depicting the Castner Range Removal Actions are as stated the following subparagraphs and are included in attachments 1 and 2.

##### **1.13.1 REGIONAL MAP**

Attachment 1 contains Figures 1-1 and Figure 1-2 showing the location of Castner range.

##### **1.13.2 SITE MAP/QD MAPS**

Attachment 2 includes drawings (Sheets 1-6) of the five areas including the MPM, exclusion zone, and MSD. As demolition material will be stored in the Fort Bliss active Ammunition Supply Point (ASP) the magazine locations are not within the Castner Range site and are not included in this ESS. The explosive storage for operations will be in Government approved explosive magazines and approved siting plans for the magazines are maintained by Fort Bliss. If a munition with a greater fragmentation distance than the MPM for the area is found, the Exclusion Zone (EZ) will be extended using the distances in Table C5.T1 or C5.T2, DOD 6055.9-STD and work will continue while an amendment to the ESS is being processed.

It will be necessary to transport explosives on public highways from the Fort Bliss ASP to Castner Range. USA explosive vehicle operators will have a current commercial driver license with a HAZMAT

endorsement. Explosives will be transported in closed vehicles whenever possible. The load shall be well braced and, except when in closed vehicles, covered with a fire-resistant tarpaulin or in an appropriate shipping container. All explosives in vehicles will be in IME-22 containers with each container complying with compatibility requirements. In accordance with DOT Regulations, explosives (less than 96-lbs.) carried in IME-22 containers are classified 1.4 and do not require placards or permits other than a BATF permit for transportation on public highways in Texas or New Mexico.

The RA surveys will begin in grids within the areas that do not require engineering controls to maintain the MSD EZ for personnel, public highways, or structures. Intrusive investigations will not be performed less than 200 feet, using the MOFB, from personnel, public highways, or structures. Based on the surveys and lack of any evidence of UXO or OE, an amendment to the ESS may be submitted to perform surface clearance surveys only within the 200 feet of inhabited buildings, highways and structures.

#### **1.14 PLANNED OR ESTABLISHED DEMOLITION AREAS**

The EZ for the intentional detonations will be the MSD, which is the calculated maximum fragmentation distance for the MPM of each area as furnished by USAESCH unless engineering controls are used.

#### **1.15 FOOTPRINT AREAS**

##### **1.15.1 BLOW-IN PLACE**

The EZ will be as described in paragraph 1.14.

##### **1.15.2 COLLECTION POINTS**

Collection points for UXO will not be used. All OE or items requiring venting will be vented or detonated in the area where found.

##### **1.15.3 IN GRID CONSOLIDATED SHOTS**

The EZ will be as described in paragraph 1.14. Demolition operations will begin in a work site when all nonessential personnel are out of the MSD for Intentional detonations of the ordnance being detonated. UXO that is acceptable to move may be consolidated, in accordance with CEHNC Procedures for Demolition of Multiple Rounds (Consolidated Shots) on Ordnance and Explosives (OE) Sites, August 1998 (Terminology update March 2000), within an area (with USACE OE Safety Specialist concurrence) to reduce the number of shots and lessen environmental damage. To the greatest extent possible, all items will be BIP to reduce the risk inherent in handling and movement.





US Army Engineering  
And Support Center,  
Huntsville



Huntsville, Alabama

USA Environmental, Inc.

Tampa, FL

Prepared By:  
Reviewed By:  
Drawing Code:  
Design File No:  
Date:  
JAL 9/30/2002  
Design By:  
Drawn By:  
Title:  
U.S. ARMY ENGINEERING  
AND SUPPORT CENTER  
HUNTSVILLE, ALABAMA

El Paso Texas  
Ft. Bliss

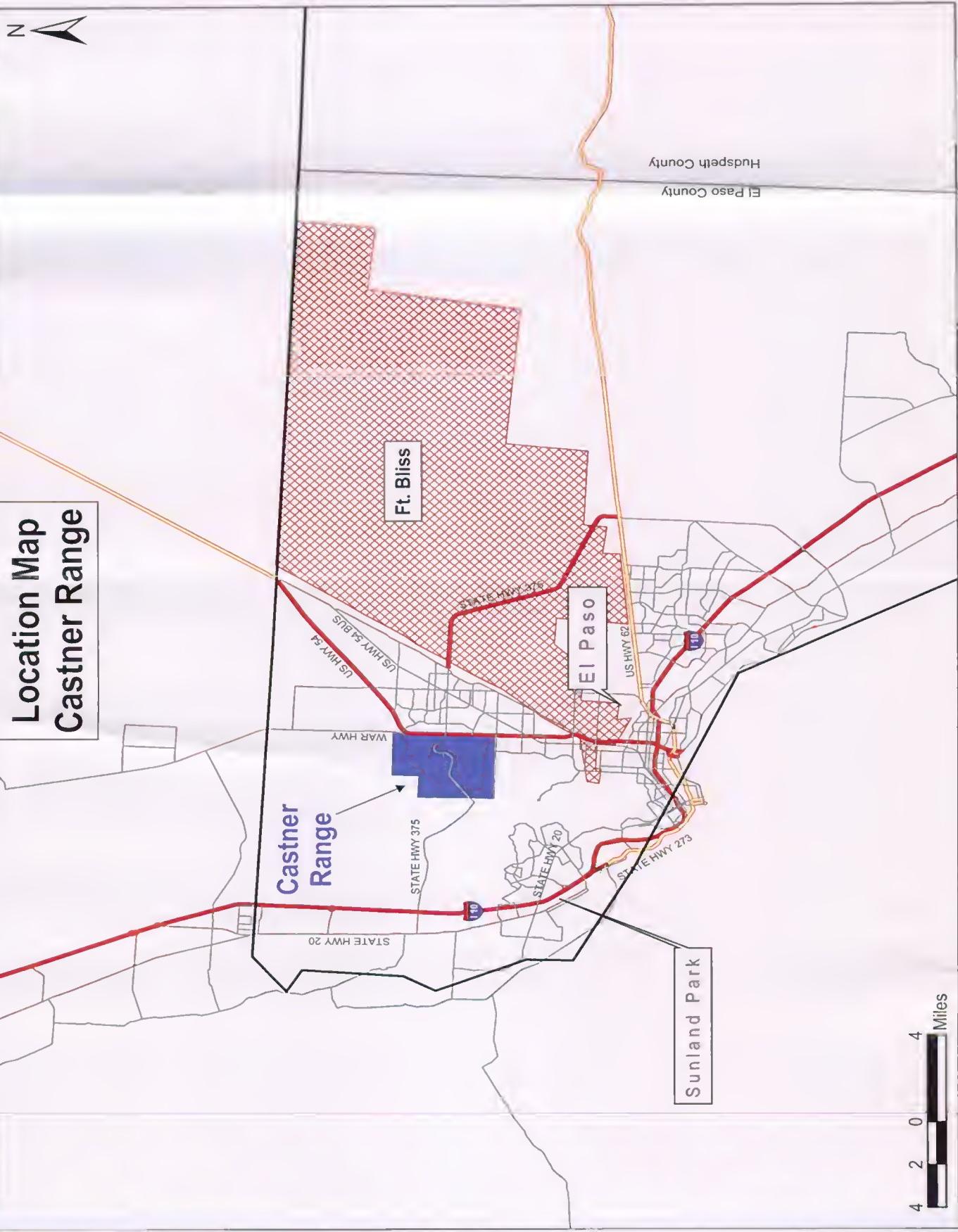
Castner Range  
Figure 1-2

Contract Number:  
DACA87-00-D-0036

Task Order:  
0014

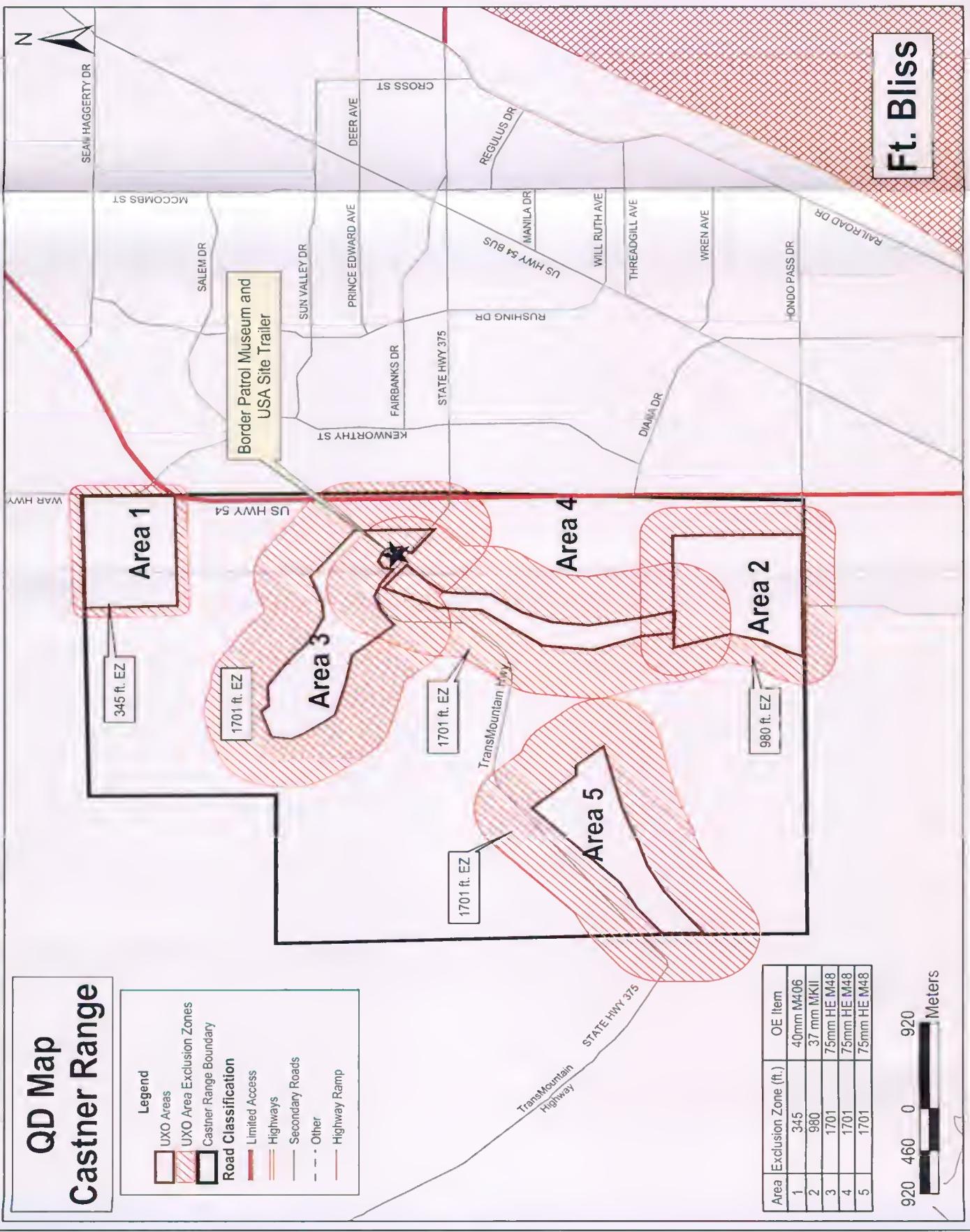
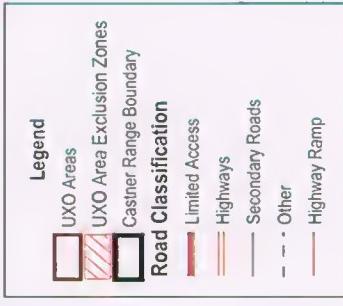
Sheet 1 of 1

## Location Map Castner Range



Attachment 2

# QD Map Castner Range



US Army Engineering  
And Support Center,  
Huntsville, Alabama

Huntsville, Alabama

Submitted By: USA Environmental, Inc.

Prepared By: Drawing Code: GS

Date: 12/05/2002 Design No.: 3

Designated By: JAL

Drawn By: GS

Print Date: 12/05/2002

Printed By: USA Environmental, Inc.

Project Name: Ft. Bliss

Location: Huntsville, ALABAMA

U.S. ARMY ENGINEERING AND SUPPORT CENTER

Tampa, FL

El Paso Texas

Ft. Bliss

Figure 1-2

Castner Range

Contract Number:  
DACA87-00-D-0036

Task Order:  
0014

Sheet 1 of 6

**Ft. Bliss**

US Army Engineering  
And Support Center,  
Huntsville, Alabama



Huntsville, Alabama

Submitted By:	Tampa, FL		
Path C: Sustained Dose Model	Path D: Sustained Dose Model	Path E: Sustained Dose Model	Path F: Sustained Dose Model
Path G: Sustained Dose Model	Path H: Sustained Dose Model	Path I: Sustained Dose Model	Path J: Sustained Dose Model
USA Environmental, Inc.			
PREPARED BY:			
Reviewed By:			
Design File No:			
Date:			
Drawn By:			
CD#:			
GS:			
JAL:			
Designated By:			
REVISED BY:			
REVIEWED BY:			
DRAWN BY:			
DESIGNED BY:			
U.S. ARMY ENGINEERING AND SUPPORT CENTER	HUNTSVILLE, ALABAMA		
Designated By:	Date:		
JAL	11/20/2002		
GS	1		

El Paso Texas  
Ft. Bliss

Contract Number:  
DACA87-500-D-0036

Task Order:  
0014

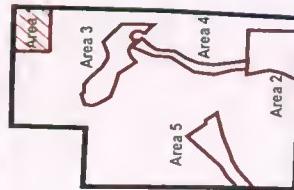
Sheet 2 of 6

## Castner Range

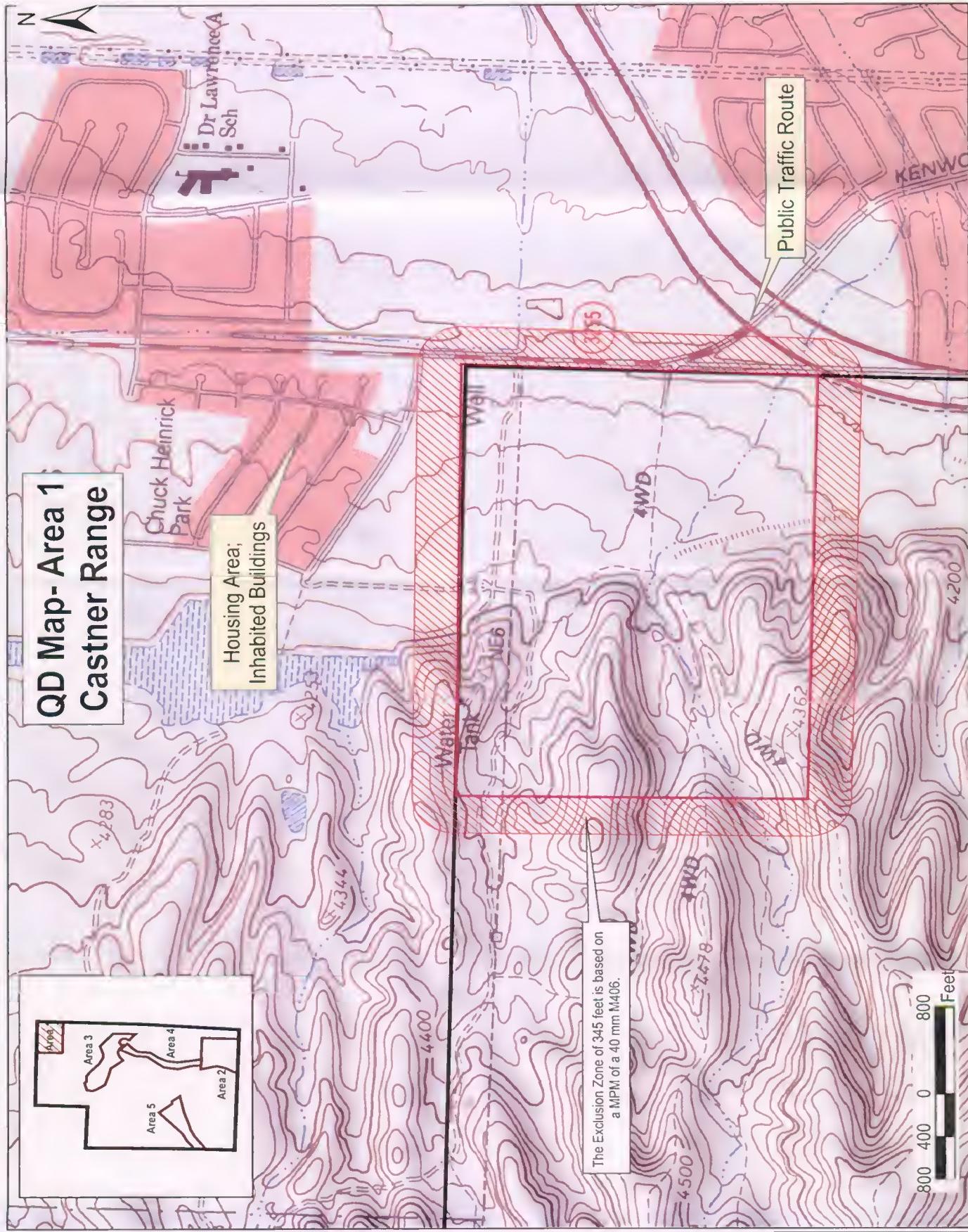
### QD Map- Area 1 Castner Range

Housing Area;  
Inhabited Buildings

The Exclusion Zone of 345 feet is based on  
a MPM of a 40 mm M406.



800 400 0 800  
Feet



US Army Engineering  
And Support Center,  
Huntsville



Huntsville, Alabama

Submitted By		Tampa, FL	
Prepared By		Prepared By	
Reviewed By		Reviewed By	
Design By		Drawing Code	
JAL	GS	JAL	GS
Design File No.	Drawn File No.	Design File No.	Drawn File No.
12/05/2002	3	12/05/2002	3

Submitted By		USA Environmental Inc.	
Prepared By		Prepared By	
Reviewed By		Reviewed By	
Design By		Drawing Code	
JAL	GS	JAL	GS
Design File No.	Drawn File No.	Design File No.	Drawn File No.
HUNTSVILLE, ALABAMA			

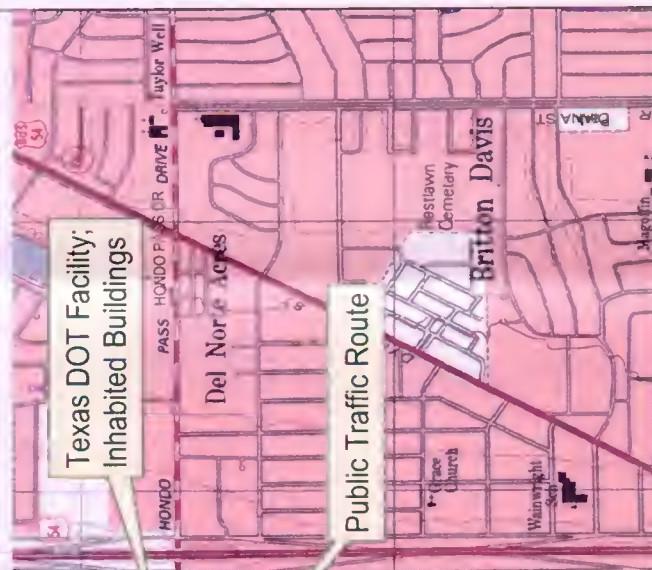
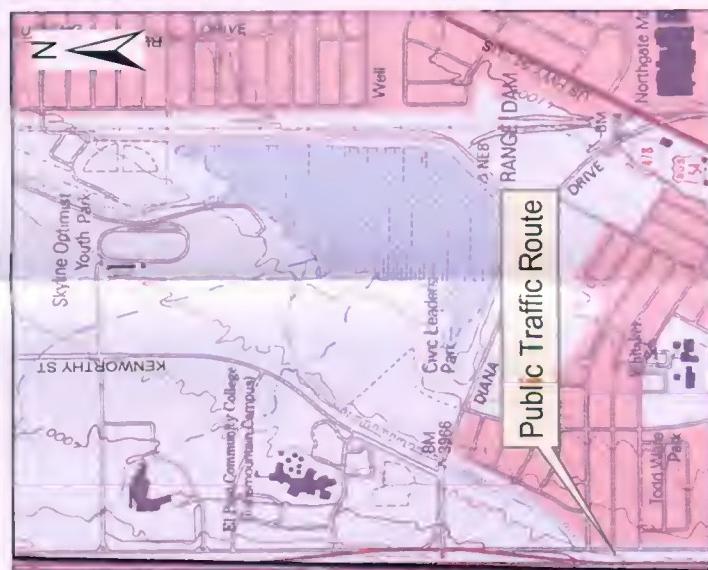
El Paso Texas  
Ft. Bliss

Contract Number:  
DACA-87-500-D-0036

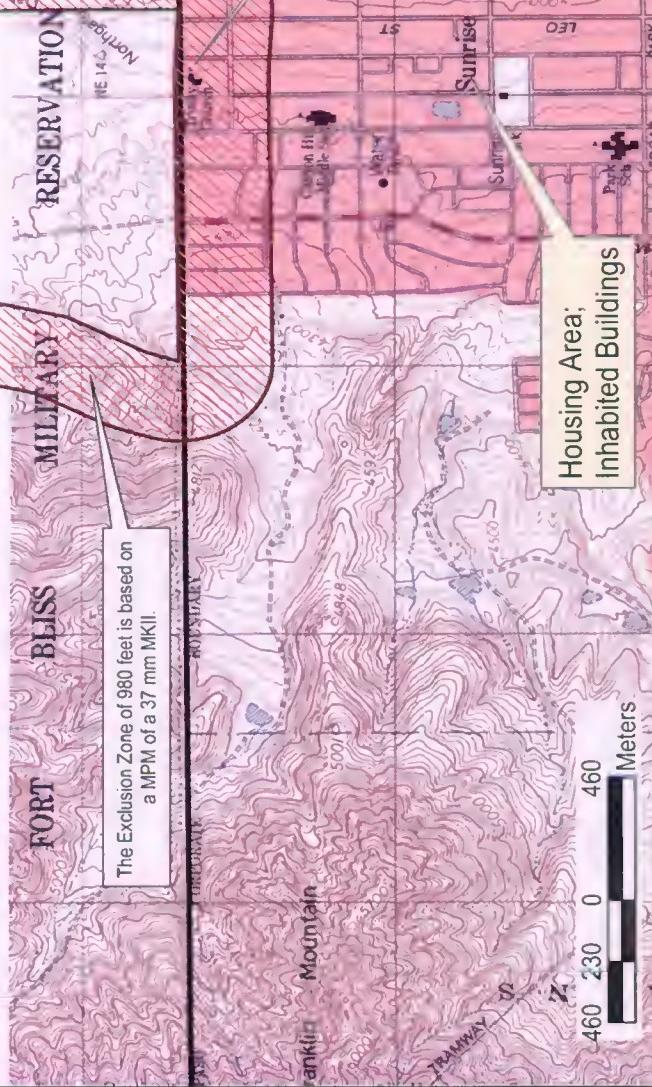
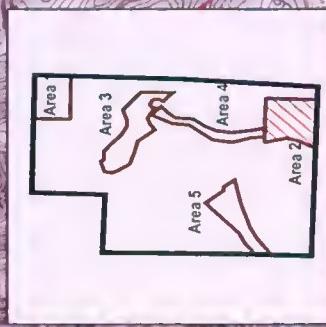
Task Order:  
0014

Sheet 3 of 6

### Castner Range



### QD Map- Area 2 Castner Range



US Army Engineering  
And Support Center,  
Huntsville



Huntsville, Alabama

Prepared By:	USA Environmental Inc.
Submitted By:	Tampa, FL
Design File No.:	11/20/2002
Date:	11/20/2002
Drawn By:	JAL GS
Checked By:	JAL GS
Approved By:	JAL GS
U.S. ARMY ENGINEERING AND SUPPORT CENTER, ALABAMA	
HUNTSVILLE, ALABAMA	

Prepared By:	USA Environmental Inc.
Submitted By:	Tampa, FL
Design File No.:	11/20/2002
Date:	11/20/2002
Drawn By:	JAL GS
Checked By:	JAL GS
Approved By:	JAL GS
U.S. ARMY ENGINEERING AND SUPPORT CENTER, ALABAMA	
HUNTSVILLE, ALABAMA	

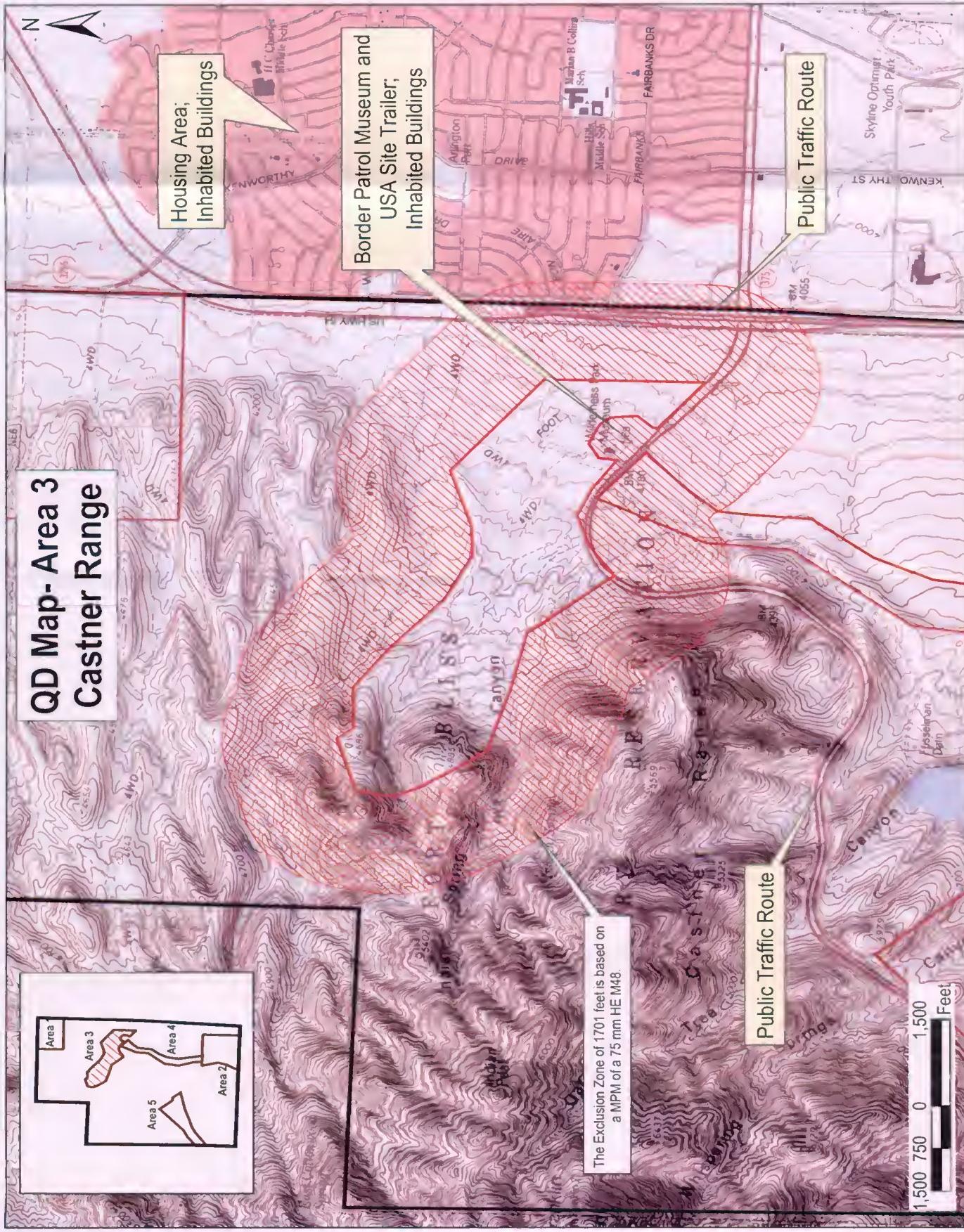
El Paso Texas  
Ft. Bliss

Castner Range

Contract Number:  
DACA87-500-D-0036

Task Order:  
0014

Sheet 4 of 6



US Army Engineering  
And Support Center,  
Huntsville



Huntsville, Alabama

U.S. ARMY ENGINEERING AND SUPPORT CENTER		HUNTSVILLE, ALABAMA	
DESIGNED BY: JAL GS		DRAWN BY: JAL GS	
DATE: 11/27/2002		DESIGN FILE NO: 2	
PREPARED BY: USA Environmental Inc.		SUBMITTED BY: USA Environmental Inc.	
REVISED BY: USA Environmental Inc.		DRAWN BY: USA Environmental Inc.	
PMS: 285		SCALE: 1:15000	
PMS: 285		DATE DRAWN: 11/27/2002	
PMS: 285		PMS: 285	

EI Paso Texas  
Ft. Bliss

Contract Number:  
DACA87-500-D-0036

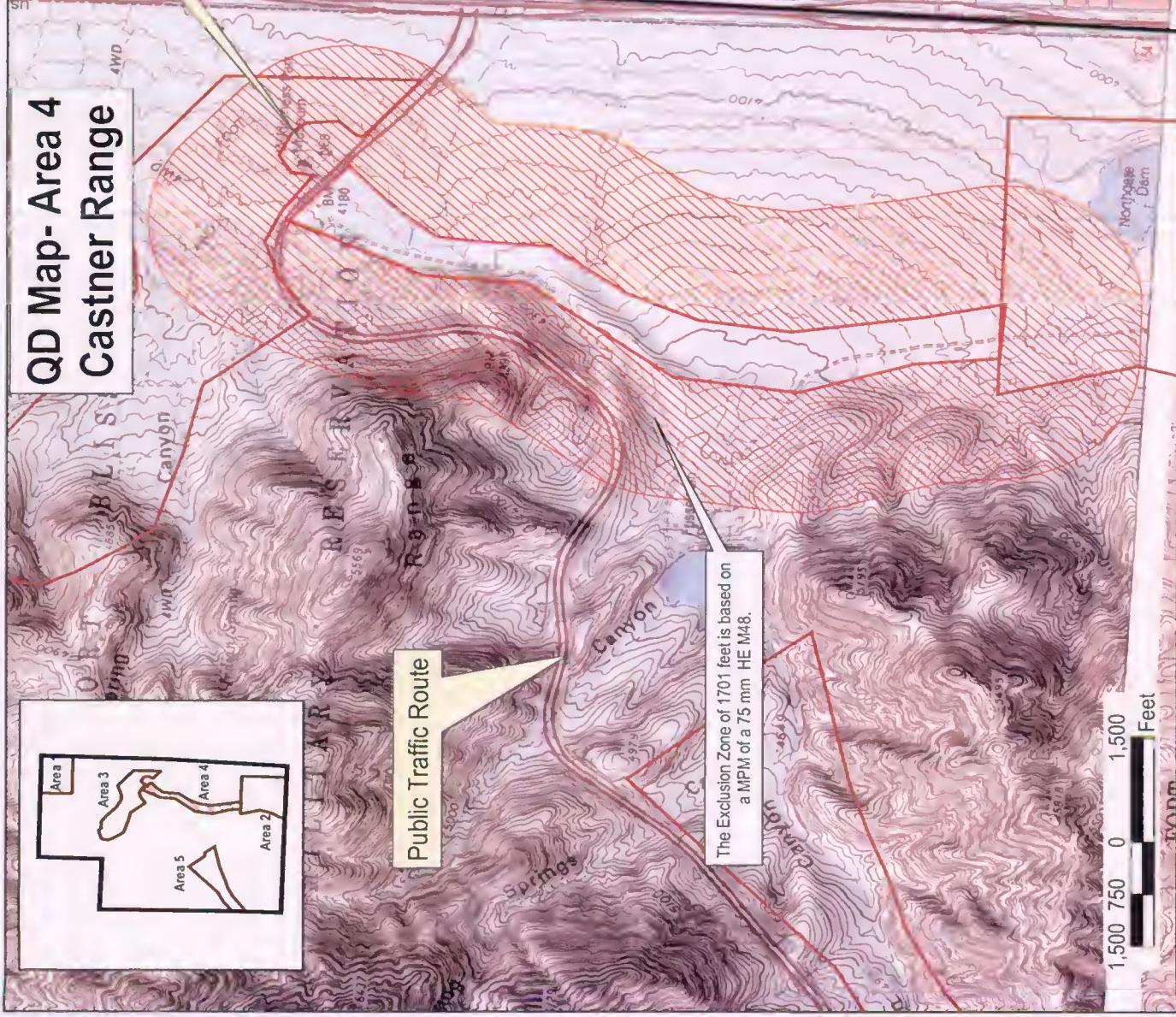
Task Order:  
0014

Sheet 5 of 6

## Castner Range



## QD Map- Area 4 Castner Range



**US Army Engineering  
And Support Center,  
Huntsville**



Huntsville, Alabama

Designated By	JAL	Drawn By	Design File No.
Revised By	JAL	Cust GS	
Drawing Code		Revised By	
		Submitted By	
		Print Date	17/12/2002
		Page No.	5/5
		Date	2002-12-17
		Comments	Initials

1

AMPA. FI

70

El Paso Texas  
Ft. Bliss

**Contract Number:**  
DACA87-500-D-0036

Task Order:  
0014

Sheet 6 of 6

QD Map- Area 5  
Castner Range

The Exclusion Zone of 1710 feet is based on a MPM of a 75 mm HE M48.

